



Response Under 37 C.F.R. § 1.192
Expedited Procedure
Examining Group 1600

PATENT APPLICATION
SERIAL NO. 09/040,161
ATTY. DOCKET NO. 2509-980383

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Group Art Unit 1623 :
In re application of :
Paul L. KORNBLITH : METHOD FOR PREPARING CELL
Serial No. 09/040,161 : CULTURES FROM BIOLOGICAL
Filed March 17, 1998 : SPECIMENS FOR CHEMOTHERAPEUTIC
Examiner Ralph Gitomer : AND OTHER ASSAYS

Pittsburgh, Pennsylvania
May 17, 1999

APPEAL BRIEF

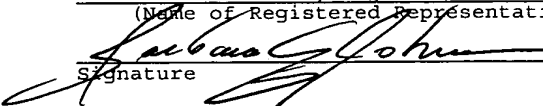
Box AF
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This Appeal Brief is filed further to the Notice of Appeal filed in the above-identified patent application on February 15, 1999. The Notice of Appeal appeals the decision of the Examiner dated October 13, 1998 finally rejecting claims 13-20.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, VA 22202-3513 on May 17, 1999.

Barbara E. Johnson, Registration No. 31,198
(Name of Registered Representative)

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Signature Date

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The headings used hereunder and the subject matter set forth under each heading are in accordance with 37 C.F.R. § 1.192(c).

I. REAL PARTY IN INTEREST

The real party in interest is the Applicant of the above-identified application as listed in the caption of this Brief.

II. RELATED APPEALS AND INTERFERENCES

No other Appeals or Interferences are known to the Applicant, Applicant's representative, or Applicant's assignee which would be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Each of claims 13-20 are finally rejected in the Final Office Action dated October 13, 1998. Claims 13-20 are reproduced in Appendix A.

IV. STATUS OF AMENDMENTS

Subsequent to the Final Office Action dated October 13, 1998, an Amendment to claims 13 and 20 was submitted on January 13, 1999. In an Advisory Action dated February 1, 1999, Applicant was advised that the Proposed Amendment would be entered upon filing of a Notice of Appeal and an Appeal Brief.

V. SUMMARY OF THE INVENTION

As described in the specification, the invention defined in the claims on appeal is a method of screening a number of candidate therapeutic or chemotherapeutic agents for efficacy as to a specific patient (page 2, lines 28-31).

The claimed method includes the steps of harvesting a tissue sample from a patient, preparing and culturing the tissue sample, and exposing subcultures of the sample to a plurality of treatments and/or therapeutic agents to identify the best treatment protocol for the patient (page 2, lines 31-35).

More particularly, a tissue sample is harvested from the patient by a suitable biopsy or surgical procedure (page 4, lines 30-35). Preparation of the tissue sample includes subdividing or mincing the sample, placing the sample in growth medium and further mincing the sample into cohesive multicellular particulates (page 5, lines 2-15). The resulting particulates are placed in sterile growth medium and are incubated to grow out a monolayer of cells (page 5, lines 30-31). The growth of these cells may be monitored by periodically counting the cells in the monolayer on a periodic basis (page 6, lines 17-20). Cultured cells are suspended and are removed from the culture flask (page 8, line 8) to be dispensed in segregated sites (page 8, lines 34-36). The cells in the segregated sites are exposed to active agents (page 9, lines 5-7) for a period of time and are then counted (page 10, lines 5-8). The process leads to the determination of the most appropriate agent and the most appropriate concentration of that agent for actual patient exposure (page 11, lines 6-10).

VI. ISSUE PRESENTED

The issue presented by this appeal is whether, under 35 U.S.C. § 112, first paragraph, claims 13-20 are enabled in view of the disclosure of the specification and the general knowledge in the art.

VII. GROUPING OF CLAIMS

Claims 13-20 stand or fall together.

VIII. ARGUMENT

Claims 13-20 stand finally rejected under 35 U.S.C. § 112, first paragraph, as based on a disclosure which is purportedly not enabling.

The Examiner's position is that the size of the claimed cohesive multicellular particulates is critical or essential to the practice of the invention. The Examiner concludes that, because the size of the particulates is not included in the claims, the claims are not enabled by the disclosure. The Examiner alleges that the specification, though being enabling for particles of a specific size (1 mm³), does not reasonably provide enablement for particles of other sizes, and, hence, that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with the claims.

In rejecting each of the appealed claims for lacking enablement by allegedly not claiming a critical feature, the Examiner has ignored the standard for enablement rejections, set forth in MPEP § 2164.08(c):

[A]n enablement rejection based on the grounds that a disclosed critical limitation is missing from a claim should be made only when the language of the specification makes it clear that the limitation is critical for the invention to function as intended.

The specification provides a preferred sample size, but states that it is not necessary that the sample be this size. The language of the specification does not state that adherence

to the 1 mm³ size is critical; it states that "[p]referably but not necessarily, the tumor particulates each measure 1 mm³" (page 5, lines 15-16).

In support of the rejection of claims 13-20, the Examiner cites *In re Mayhew*, 517 F.2d 1229, 188 U.S.P.Q. 356 (CCPA 1976). In the cited case, claims that failed to include an essential step in a method were found to be properly rejected because of the emphasis, in the specification, on the special nature of the step. However, in the same cited case, the Examiner's rejection of claims for failing to include a temperature range for the essential step was found to be improper because the cooling function of the temperature range was self-evident.

By application of the reasoning of *In re Mayhew*, Applicant's claims should be allowed. Applicant has omitted no steps in the description of the sample preparation process. The sample size is selected for a function which is clearly evident from the specification culturing a tissue sample. Applicant has provided sufficient information in the specification for a suitable sample size to be selected and, as is noted in *In re Mayhew* (op. cit. at 1233), the claims must be read in light of the specification.

In re Wands indicates the enablement standard--whether the disclosure, when filed, contained sufficient information regarding the subject matter of the claims to enable one skilled in the pertinent art to make and use the claimed invention without undue experimentation. *In re Wands*, 858 F.2d 731, 737,

8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1988). Factors to be considered in this determination include, but are not limited to:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;
- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;
- (G) The existence of working examples; and
- (H) The quality of experimentation needed to make or use the invention based on the content of the disclosure.

Wands at 737.

When the claims are viewed in light of these factors, they are found to enable a range of particle sizes. A proper analysis of the scope of the claims takes into account what is well-known in the art, and the level of knowledge of one with ordinary skill in the art. However, apparent limitations need not be included in the specification or the claims. "In order to be enabling under 35 U.S.C. § 112, a patent application must sufficiently disclose an invention to enable those skilled in the art to make and use it. The specification need not disclose what is well known in the art." See also *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991).

In addition, the specification provides a context for the application of knowledge of the prior art. The specification, in describing the multicellular particulates, in describing a preferred size for the particulates, in describing the desired growth character of a monolayer prepared from 1 mm³ particulates, and in listing the devices and describing the techniques used in tissue culturing, provides a context from which a person skilled in the art can determine what sample sizes are called for. The present disclosure provides significantly

more information than the disclosure found to be enabling *In re Bundy*, 642 F.2d 430, 434, 209 U.S.P.Q. 48, 51-52 (CCPA 1981), in which the court ruled that the appellant's disclosure was sufficient to enable one skilled in the art to use the claimed analogs of naturally-occurring prostaglandins, even though the specification lacked any examples of specific dosages, because the specification taught that the novel prostaglandins had certain pharmacological properties and possessed activity similar to known E-type prostaglandins.

In practicing the present invention, if a sample were too large, it would be impracticable to culture it due to size limitations of the standard culture vessel used to culture the cohesive multicellular particulates. Also, removal of a total organ, limb, or head (as the Examiner suggests is covered by the claims) would be contrary to the purpose of culturing the cells of the present invention, which is to assess a biopsy sample, not an amputated body part. The purpose of the present invention is to provide a means to ascertain optimal treatment of a malignancy, ironically so as to avoid gross surgical intervention, such as amputation or removal of an entire organ.

Similarly, if a sample is too small (i.e., does not contain a requisite minimum number of viable cells), it will not yield the desired monolayer. A skilled practitioner would not deviate from the roughly 1 mm³ size without empirically determining whether the smaller sizes are as effective as the 1 mm³ samples in creating a monolayer which reflects a cancer in a patient. The lower and upper size limitations are very easily deduced according to the teachings of the specification by

comparing parallel cultures of cells derived from particulates less than 1 mm³ to cultures derived from 1 mm³ particulates of the same sample to determine when the parallel cultures share growth characteristics and react similarly to the same therapeutic agents.

Tissue culturing techniques are well-known. A large variety of culture media, culture vessels and incubation conditions are well-known in the art. A very large number of tumor cells have been cultured (see Appendix B, an excerpt from ATCC CELL LINES AND HYBRIDOMAS, 8th Edition (1994), pp. 561-568 (Tumor Index)). Further, the addition of chemicals to culture media to ascertain the effects of the chemical on the cells is well-known. Once a skilled person is instructed to use cohesive multicellular particulates to prepare the cell culture of the present invention and that the size of particulates in a working example can be, as a preferred example, 1 mm³, the skilled person would be able to culture the cells and determine whether the cells are growing, whether they are sensitive to a therapy, and, as discussed above, whether the cells reflect the growth characteristics and therapy sensitivity of the patient's tissue, within a reasonable range of sizes of cohesive multicellular particulates as could be determined as described above.

The enablement standard also involves the quantity and type of experimentation needed to make and use an invention, and the quantity and type of direction provided in the specification. "The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a

reasonable amount of guidance with respect to the direction in which the experimentation should proceed.'" In re Wands (*op. cit.* at 737, 1404, citing *In re Jackson*, 217 U.S.P.Q. 804, 807 (Bd. App. 1982)). No experimentation is needed to practice the present invention, since a sample size is specified in the disclosure. The specified sample size, when cultured, produces the desired tissue sample. Varying sample size involves the simple selection of a particle size and comparison of the resultant monolayer with a monolayer prepared from cells of about 1 mm³. This process is a change in a single numerical variable; it is not the unguided selection of a technique or material from a myriad of possibilities that could constitute undue experimentation.

In addition to supplying information on the size of the sample, the specification also provides guidance in the form of context. Given the benchmark provided, the experimenter can use larger sample sizes or smaller sample sizes. The example of the specification discloses that the tissue sample is to be placed into culture medium and "minced by using two sterile scalpels in a scissor-like motion, or mechanically equivalent to manual or automated opposing incisor blades.... Preferably but not necessarily, the tumor particulates each measure 1 mm³." (Page 5, lines 10-16) A person using this procedure will produce a population of particulates which will work in the practice of the invention with a range of larger and smaller particulates.

IX. CONCLUSION

The Examiner's rejection of claims 13-20 does not meet the standard for an enablement rejection based on the asserted

grounds that a disclosed critical limitation is missing from a claim. The language of the specification clearly states that cohesive multicellular particulate size is not critical. As described above, no undue experimentation is required to determine a suitable multicellular particulate size to practice the invention.

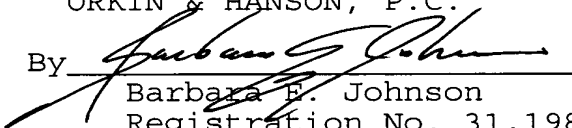
Reversal of the final rejections and allowance of claims 13-20 are respectfully requested.

The original and two (2) copies of this Appeal Brief are enclosed along with a check in the amount of \$150.00 for the filing fee as required by 37 C.F.R. § 1.17(c).

Respectfully submitted,

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Appendix A

13. A method for preparing a biopsy sample of tissue containing malignant cells for chemosensitivity testing, compromising:

(a) obtaining a tumor specimen from a biopsy sample
5 of tissue containing malignant cells;

(b) mechanically separating said specimen into cohesive multicellular particulates having smooth cut edges;

(c) growing a tissue culture monolayer from said cohesive multicellular particulates having smooth cut edges;

10 (d) inoculating cells from said monolayer into a plurality segregated sites;

(e) treating said plurality of sites with at least one agent; and

15 (f) assessing chemosensitivity of the cells in said plurality of sites.

14. The method according to claim 13 wherein said plurality of segregated sites compromise a plate containing a plurality of wells therein.

15. The method according to claim 14 wherein said plurality of wells is treated over a length of time adequate to permit assessment of both initial cytotoxic effect and longer term inhibitory effect of at least one of said plurality of
5 active agents.

16. The method according to claim 15 wherein step (d) is accomplished by a multiple well pipetting device.

17. The method according to claim 16 wherein the cells in step (d) are further suspended in medium prior to inoculation into said plate containing a plurality of wells therein.

18. The method according to claim 17 wherein said agent is at least one of the agents selected from the group consisting of a radiation therapy agent, a radiation therapy sensitizing agent and a radiation therapy desensitizing agent.

19. The method according to claim 17 wherein said agent is an immunotherapeutic agent.

20. A method for preparing a biopsy sample of tissue containing malignant cells for chemosensitivity testing, comprising:

5 (a) obtaining a tumor specimen from a biopsy sample of tissue containing malignant cells;

(b) mechanically separating said specimen into cohesive multicellular particulates of minced tumor tissue;

(c) growing a tissue culture monolayer from said cohesive multicellular particulates of minced tumor tissue;

10 (d) inoculating cells from said monolayer into a plurality of segregated sites;

(e) treating said plurality of sites with at least one agent; and

15 (f) assessing chemosensitivity of the cells in said plurality of sites.



ATCC CELL LINES and HYBRIDOMAS

8th edition
1994

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Hybridomas

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A user's guide is inside the
front cover.



American
Type Culture
Collection

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ATCC

Cell Lines and Hybridomas

Eighth Edition, 1994

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PRICE CODE KEY	

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Tumor/Species/Site	Name	ATCC® No.	Page	Tumor/Species/Site	Name	ATCC® No.	Page
Abelson virus-induced tumor					MDA-MB-330	HTB-127	298
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* No additional details; for an explanation see NBL Introduction, p. 344.

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	NCI-H1404	CRL-5819	204	submaxillary gland	A-253	HTB-41	260
	NCI-H2126	CCL-256	138	testis	Cates 1B	HTB-104	288
lung, carcinoma, small cell					NTERA-2	CRL-1973	188
	DMS 53	CRL-2062	199		cl.D1		
	DMS 114	CRL-2066	200		Tera-1	HTB-105	288
	DMS 153	CRL-2064	199	thyroid	Tera-2	HTB-106	289
	NCI-H69	HTB-119	294		SW 579	HTB-107	289
	NCI-H82	HTB-175	314	tongue	TT	CRL-1803	174
	NCI-H128	HTB-120	295		SCC-4	CRL-1624	156
					SCC-9	CRL-1629	157
					SCC-15	CRL-1623	156
					SCC-25	CRL-1628	157

* No additional details; for an explanation see NBL Introduction, p. 344.

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Carcinoma (continued)							
human, unknown	Hs 696	HTB-151	307	mouse	PLC/PRF/5	CRL-8024	205
vulva	SW 954	HTB-117	293		Hepa 1-6	CRL-1830	176
	SW 962	HTB-118	293	rat	Hepa-1c1c7	CRL-2026	195
mouse					H4TG	CRL-1578	150
ascites	E	CCL-77	45		H-4-II-E	CRL-1548	147
embryo	P19	CRL-1825	175		H-4-II-E-C3	CRL-1600	153
kidney	RAG	CCL-142	82		McA-RH7777	CRL-1601	153
lung	LL/2	CRL-1642	158		McA-RH8994	CRL-1602	154
rectum	CMT-93	CCL-223	118		MH ₁ C ₁	CCL-144	83
squamous cells	KLN 205	CRL-1453	143		NI-S1	CRL-1604	154
stem cells	SCC-PSA1	CRL-1535	146		NI-S1 Fudr	CRL-1603	154
submandibular gland	SCA-9	CRL-1734	168	trout	RTH-149	CRL-1710	166
	clone 15			Histiocytoma			
testis	F9	CRL-1720	167	human	GCT	TIB-223	341
	NULLI-SCC1	CRL-1566	148	Islet cell tumor			
thyroid	MTC-M	CRL-1806	174	rat	RIN-5F	CRL-2058	198
rat					RIN-14B	CRL-2059	198
intestine, small	IA-XsSBR	CRL-1677	163		RIN-m	CRL-2057	198
liver	H4-II-E-C3	CRL-1600	153	Leiomyoblastoma			
	McA-RH7777	CRL-1601	153	human, kidney	G-402	CRL-1440	142
	McA-RH8994	CRL-1602	153	Leiomyosarcoma			
	MH ₁ C ₁	CCL-144	83	hamster, Syrian	DDT ₁ MF-2	CRL-1701	165
	NI-S1	CRL-1604	154	human	SK-LMS-1	HTB-88	283
	NI-S1 Fudr	CRL-1603	154		SK-UT-1	HTB-114	292
mammary	13762 MAT	CRL-1666	161		SK-UT-1B	HTB-115	292
	B III			Leukemias & lymphomas			
	NMU	CRL-1743	169	bovine	BL-3	CRL-8037	206
	RBA	CRL-1747	170	cat	FeLV-3281	CRL-9116	215
thyroid	6-23	CRL-1607	154	gibbon, lymphoma	MLA 144	TIB-201	339
unspecified	LLC-WRC	CCL-38	23	human: <i>See also Burkitt lymphoma</i>			
	256			blood	6T-CEM	CRL-8296	210
Chondrosarcoma					6T-CEM 20	CRL-8295	209
human	SW 1353	HTB-94	286		AGR-ON	CRL-8199	209
Choriocarcinoma					AML-193	CRL-9589	219
human	BeWo	CCL-98	59		CCRF-CEM	CCL-119	68
	JAR	HTB-144	305		CCRF-CEM	CRL-8436	210
	JEG-3	HTB-36	257		CCRF-HSB-2	CCL-120.1	69
Desmoid tumor					CCRF-SB	CCL-120	68
human	D422T	CRL-1659	160		CEM-CM3	TIB-195	338
Fibroma					CESS	TIB-190	338
gerbil, paw	IMR-33	CCL-146	84		Clone 15	CRL-1964	188
Fibrosarcoma					HL-60		
human	Hs 913T	HTB-152	307		DAKIKI	TIB-206	339
	HT-1080	CCL-121	70		H9	HTB-176	315
	SW684	HTB-91	284		H33HJ-JA1	CRL-8163	208
mouse	HSDM ₁ C ₁	CCL-148	85		HEL 92.1.7	TIB-180	337
	WEHI 164	CRL-1751	170		HL-60	CCL-240	127
Glial tumor					HUT 78	TIB-161	335
rat	C ₆	CCL-107	63		HUT 102	TIB-162	336
Glioblastoma					J45.01	CRL-1990	190
human, brain	A-172	CRL-1620	156		J-99	CRL-8131	208
	DBTRG-	CRL-2020	195		J-111	CRL-8129	207
	05MG				J-A1886	CRL-8130	208
	T98G	CRL-1690	164		J.CaM1.6	CRL-2063	199
	U-87MG	HTB-14	245		JMI	CRL-10423	224
	U-118 MG	HTB-15	245		J.RT3-T3.5	TIB-153	335
	U-138 MG	HTB-16	246		Jurkat, clone	TIB-152	335
	U-373 MG	HTB-17	246		E6-1		
Glioma					MJ	CRL-8294	209
human, brain	Hs 683	HTB-138	303		Mo	CRL-8066	207
Hepatoma					Mo-B	CCL-245	130
human	C3A	CRL-10741	225		MOLT-3	CRL-1552	148
	Hep 3B	HB-8064	226		MOLT-4	CRL-1582	150
	Hep G2	HB-8065	227		MV-4-11	CRL-9591	220
					OM.10.1	CRL-10850	226

* No additional details; for an explanation see NBL Introduction, p. 344.

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human, blood (continued)	Reh	CRL-8286	209		BW5147.G.1.4		
	RPMI 8226	CCL-155	88		OUA ^R .1	CRL-1588	151
	RPMI 8402	CRL-1994	191		C1498	TIB-49	327
	SKW 6.4	TIB-215	340		EL4	TIB-39	326
	TALL-104	CRL-11386	226		EL4.BU	TIB-40	326
	THP-1	TIB-202	339		EL4.BU.1.		
	Dami	CRL-9792	221		OUA ^R .1.1	TIB-41	327
	HU-01	CRL-10249	223		EL 4.IL-2	TIB-181	337
	IM-9	CCL-159	90		LBRM-33	TIB-155	335
	KG-1	CCL-246	131		clone 4A2		
bone marrow	KG-1	CRL-8031	206		R1.1	TIB-42	327
	KG-1a	CCL-246.1	131		R1E/TL8x.1	TIB-43	327
	MEG-01	CRL-2021	195		R1E/TL8x.1.	TIB-45	327
	RS4;11	CRL-1873	181		G1.OUA ^R .1		
	SUP-B15	CRL-1929	185		R1.G1	TIB-44	327
	TF-1	CRL-2003	193		S1A.TB.4.8.2	TIB-27	325
	Hs 602	HTB-142	304		S49 (Thy-1-a)	TIB-36	326
	10C9	CRL-10236	222		S49.1	TIB-28	325
	Hs 445	HTB-146	305		S49.1G.3	TIB-34	326
	ARH-77	CRL-1621	156		S49.1G.3	TIB-35	326
cervix	K-562	CCL-243	129	macrophage-monocytes	PHA.100/0		
	MC 116	CRL-1649	159		S49.1H.1AG.	TIB-29	325
	SUP-T1	CRL-1942	186		6/2		
	U-937	CRL-1593	152		S49.1TB.2	TIB-30	325
pleural effusion	LCL 8664	CRL-1805	174		S49.1TB.4	TIB-33	326
					DEX R.63		
					TIM1.4	TIB-37	326
					TIM1.4G.1.3	TIB-38	326
monkey, rhesus					WEHI 7.1	TIB-53	328
					J774A.1	TIB-67	329
					P388D ₁	TIB-63	329
					(IL-1)		
mouse					PUS-1.8	TIB-61	329
					RAW 264.7	TIB-71	330
					RAW 309	TIB-69	330
					Cr.1		
bone marrow	M-NFS-60	CRL-1838	176	myeloblast	WEHI 3	TIB-68	329
	BC3A	TIB-60	329		WEHI 265.1	TIB-204	339
	BC16A	TIB-59	328		WR19M.1	TIB-70	330
					M1	TIB-192	338
lymph nodes	LBRM-33-1A5	CRL-8079	207		BB88	TIB-55	328
					BC3A	TIB-60	329
					BC16A	TIB-59	328
					BCL ₁	TIB-197	338
lymphoblast	LBRM-33-5A4	CRL-8080	207		clone 5B ₁ b		
	LBRM TG6	CRL-1778	172	subcutaneous	D1B	TIB-56	328
	NFS-1.0 C-1	CRL-1705	165		D2N	TIB-58	328
				thymus	L5178Y-R	CRL-1722	167
lymphoblast, pre-B	70Z/3	TIB-158	335		L5178Y-S	CRL-1723	167
	ABE-8.1/2	TIB-205	339	unspecified	L5178Y	CRL-9518	218
	NFS-5 C-1	CRL-1693	164		TK+/-		
	NFS-25 C-3	CRL-1695	164		BCL ₁	CRL-1669	162
lymphoblast, pro-B	NFS-70 C-10	CRL-1694	164		CW13.20-3B3		
	lymphomas			rat	L1210	CCL-219	116
	BW5147	TIB-233	342		T27A	TIB-57	328
	(T200-a)5.2			basophil	RBL-1	CRL-1378	140
lymphomas	BW5147.3	TIB-234	342		C58(NT)D.1.	TIB-236	342
	(Thy-1-e).10				G.OUA ^R .1		
	L1210	CCL-219	116		11B7501	CRL-1940	186
	M1	TIB-192	338	Liposarcoma	SW872	HTB-92	285
	NCTC 3749	CCL-46.1	28				
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	S1A(Thy-1-b)	TIB-231	342	Mammary tumor			
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	CH1	TIB-221	341				
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	WEHI-231	CRL-1702	165				
	WEHI-279	CRL-1704	165				
	X16C8.5	TIB-209	340				
	ABE-8.1/2	TIB-205	339				
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* No additional details; for an explanation see NBL Introduction, p. 344.

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	Mm5MT	CRL-1637	158		P3/NSI/1-	TIB-18	325
	MMT 060562	CCL-51	30		Ag4-1		
Mastocytoma					P3X63Ag8	TIB-9	323
mouse	P815	TIB-64	329		P3X63-	CRL-1580	150
Medulloblastoma					Ag8.653		
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	D341 Med	HTB-187	321		Ag8U.1		
	Daoy	HTB-186	320		RPC 5.4	TIB-12	324
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human	A-375	CRL-1619	156		S194/5.	CRL-8837	214
	A375.S2	CRL-1872	181		XXO.BU.1		
	A2058	CRL-11147	226		S194/	TIB-20	325
	C32	CRL-1585	151		5.XXO.BU.1		
	C32TG	CRL-1579	150		SHM-D33	CRL-1668	161
	CHL-1	CRL-9446	218		Sp2/0-Ag14	CRL-1581	150
	CHL-2	CRL-9451	218		Sp2/0-Ag14	CRL-8287	209
	COLO 829	CRL-1974	189		XC 1.5/51	TIB-16	324
	COLO 829BL	CRL-1980	189		XS63	TIB-17	324
	G-361	CRL-1424	141	rat	Y3-Ag.1.2.3	CRL-1631	157
	HMCB	CRL-9607	221		YB2/0	CRL-1662	161
	Hs 294T	HTB-140	304	Neuroblastoma			
	Hs 695T	HTB-137	303	human	IMR-32	CCL-127	73
	HT-144	HTB-63	271		SK-N-MC	HTB-10	242
	Malme-3M	HTB-64	272		SK-N-SH	HTB-11	243
	RPMI-7951	HTB-66	273	mouse	NB41A3	CCL-147	84
	SK-MEL-1	HTB-67	273		Neuro-2a	CCL-131	76
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	SK-MEL-5	HTB-70	275	Neuroglioma			
	SK-MEL-24	HTB-71	276	human, brain	H4	HTB-148	306
	SK-MEL-28	HTB-72	276	Osteogenic sarcoma			
	SK-MEL-31	HTB-73	277	cat	FC25T	CRL-6090	*
	WM-115	CRL-1675	162	dog	D-17	CCL-183	99
	WM 266-4	CRL-1676	162		D17	CRL-8468	211
mouse	Clone M-3	CCL-53.1	31	human	DSN	CRL-9939	222
Mesothelioma					I43B	CRL-8303	210
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Myeloma & Plasmacytoma					BK TK		
human	HS-Sultan	CRL-1484	144		G-292, cl	CRL-1423	141
	IM-9	CCL-159	90		A141B1		
	MC/CAR	CRL-8083	207		HOS	CRL-1543	147
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	RPMI 8226	CCL-155	88		KHOS/NP	CRL-1544	147
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	SKO-007	CRL-8033-1	206		MNNG/HOS	CRL-1547	147
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	MOPC 315	TIB-23	325	rat	PC-12	CRL-1721	167
	MPC-11	CCL-167	96	Pituitary tumor			
				mouse	AtT-2/	CRL-1795	173
					DI6v-F2		
					AtT-20	CCL-89	53
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* No additional details; for an explanation see NBL Introduction, p. 344.

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	Y79	HTB-18	247		NULLI-SCC1	CRL-1566	148
Rhabdomyosarcoma					P19	CRL-1825	175
human	A-204	HTB-82	282		SCC-PSA1	CRL-1535	146
	A673	CRL-1598	153	Teratoma			
	Hs 729	HTB-153	308	mouse	XB-2	CL-177	99
	RD	CCL-136	78		XBFB	CRL-8808	213
	TE671	CRL-8805	213	Testicular tumor, Leydig cell			
	subline 2			mouse	I-10	CCL-83	49
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dog	D-17	CCL-183	99		R2C	CCL-97	58
	D-17	CRL-8468	211	Thymoma			
	DSN	CRL-9939	222	mouse	AKR1.G.I.	TIB-232	342
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hamster	DDT ₁ MF-2	CRL-1701	165		R1.1	TIB-42	327
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	143B PML	CRL-8304	210	human	G-401	CRL-1441	142
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	A673	CRL-1598	153	dog			
	G-292, clone A141BI	CRL-1423	141	to lung	D-17	CCL-183	99
	HOS	CRL-1543	147	human			
	Hs 729	HTB-153	308	to abdominal wall	NCI-H508	CCL-253	136
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	HT-1080	CCL-121	70	to bone	Hs 696	HTB-151	307
	KHOS-240S	CRL-1545	147	to bone marrow	NCI-H209	HTB-172	312
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	KHOS/NP	CRL-1544	147		NCI-H526	CRL-5811	203
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	MES-SA/Dx5	CRL-1977	189		TCCSUP	HTB-5	241
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	MNNG/HOS	CRL-1547	147		MDA-MB-361	HTB-27	252
	RD	CCL-136	78	to diaphragm	COLO 587	CRL-2000	192
	RD-ES	HTB-166	310		HPAF-II	CRL-1997	192
	Saos-2	HTB-85	282	to Fallopian tube	Caov-4	HTB-76	278
	SK-ES-1	HTB-86	283	to leg	Hs 746T	HTB-135	303
	SK-LMS-1	HTB-88	283	to liver	Capan-1	HTB-79	280
	SK-UT-1	HTB-114	292		CFPAC-1	CRL-1918	183
	SK-UT-1B	HTB-115	292		COLO 587	CRL-2000	192
	SW684	HTB-91	284		DMS 153	CRL-2064	199
	SW872	HTB-92	285		HPAFII	CRL-1997	192
	SW982	HTB-93	285		NCI-H1688	CCL-257	139
	SW1353	HTB-94	286	to lung	SU.86.86	CRL-1837	176
	U-2 OS	HTB-96	286		GCT	TIB-223	341
mouse	CCRF S-180	CCL-8	9		Hs 888Lu	CCL-211	111
	II				Hs 913T	HTB-152	307
	HSDM ₁ C ₁	CCL-148	85		Malme-3M	HTB-64	272
	MB III	CCL-32	20		T84	CCL-248	133
	Sarcoma 180	TIB-66	329		Tera-1	HTB-105	288
	WEHI 164	CRL-1751	170		Tera-2	HTB-106	289
quail	QT6	CRL-1708	166	to lymph nodes	A2058	CRL-11147	226
rat	Jensen	CCL-45	27		AN3 CA	HTB-111	290
	Sarcoma				BT-549	HTB-122	296
	RR1022	CCL-47	29		Cates-1B	HTB-104	288
	UMR-106	CRL-1661	161		HPAF-II	CRL-1997	192
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	XC	CCL-165	95		Hs 695T	HTB-137	303
Teratocarcinoma					Hs 766T	HTB-134	302
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	Tera-1	HTB-105	288		KATO III	HTB-103	287
	Tera-2	HTB-106	289		LNCaP.FGC	CRL-1740	169
					LNCaP-FGC-10	CRL-10995	226

* No additional details; for an explanation see NBL Introduction, p. 344.

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	NCI-H292	CRL-1848	177	leg/hip			
	NCI-H661	HTB-183	319	cat	FC77.T	CRL-6105	*
	NCI-H747	CCL-252	135		FC81.T	CRL-6108	*
	NCI-H820	HTB-181	317	dog	CF17.T	CRL-6219	*
	RPMT-7951	HTB-66	273	mouse	MM36T(C)	CRL-6411	*
	SK-MEL-1	HTB-67	273		MM47T	CRL-6424	*
	SK-MEL-3	HTB-69	274	trunk			
	SK-MEL-5	HTB-70	275	cat	FC100.T	CRL-6115	*
	SK-MEL-24	HTB-71	276	dog	CF24.T	CRL-6221	*
	SW620	CCL-227	121	mouse	MM37T	CRL-6414	*
	SW962	HTB-118	293	parakeet	MU12.T	CRL-6483	*
to mesentery	CaSki	CRL-1550	148	Connective and soft tissue			
to omentum	COLO 587	CRL-2000	192	mouse	+/- SCT	CRL-6469	*
	ME-180	HTB-33	255	Fibrosarcoma			
to pelvis	Hs 700T	HTB-147	306	cat	FC65.T	CRL-6100	*
to pericardial fluid	NCI-H441	HTB-174	313	mouse	MM43T	CRL-6418	*
to peritoneal fluid	RF-48	CRL-1863	179		MM46T	CRL-6423	*
to peritoneum	D283 Med	HTB-185	320		MM48T	CRL-6425	*
	NCI-H498	CCL-254	137		MM49T	CRL-6426	*
to pleura	ACHN	CRL-1611	155	Interscapular region			
	Calu-1	HTB-54	266	bat, mouse-eared	Mvi/It	CRL-6012	*
	MDA-MB-435S	HTB-129	300	Liver			
	MDA-MB-436	HTB-130	300	mouse	MM45T.Li	CRL-6421	*
	MDA-MB-453	HTB-131	301	Lung			
	MDA-MB-468	HTB-132	301	mouse	Mad/C3	CRL-6367	*
	NCI-H82	HTB-175	314	Lymph node			
	NCI-H146	HTB-173	313	bovine	2FLB.Ln	CRL-6045	*
	NCI-H446	HTB-171	312		2LBLN	CRL-6047	*
	NCI-H460	HTB-177	315		3LBLN	CRL-6048	*
	NCI-H676B	HTB-179	316		5LBLN	CRL-6049	*
to skin	Caki-1	HTB-46	262		6LBLN	CRL-6050	*
	DU 4475	HTB-123	296		LB9.Ln	CRL-6057	*
	SK-MEL-2	HTB-68	274		LB10.Ln	CRL-6062	*
to subcutaneous tissue	ChaGo K-1	HTB-168	311		LB11.Ln	CRL-6066	*
	HT-144	HTB-63	271		LBLN	CRL-6046	*
	NCI-H125	CRL-5801	200		R2LBLN	CRL-6070	*
to supraclavicular region	LoVo	CCL-229	122	cat	F8	CRL-6074	*
to supra-orbit	SK-N-MC	HTB-10	242		LFC16.Ln	CRL-6173	*
to umbilicus	COLO 829	CRL-1974	189	dog	CLN	CRL-6245	*
mouse				Lymph node, head/neck			
to lung	LL/2	CRL-1642	158	cat	F1B	CRL-6168	*
NBL ANIMAL CANCER CELL LINES				Lymphoma			
Bladder				cat	FC11.BM	CRL-6088	*
mouse	MM45T.B1	CRL-6420	*		FC11th	CRL-6089	*
Bone				Mammary gland			
dog	D17	CRL-6248	*	dog	CF29.Mg	CRL-6224	*
	D22	CRL-6250	*		CF33.Mg	CRL-6227	*
	D39	CRL-6251	*		CF34.Mg	CRL-6228	*
Bone marrow					CF35.Mg	CRL-6229	*
bovine	LB9.Bm	CRL-6053	*	dog	CF41.Mg	CRL-6232	*
	LB10.Bm	CRL-6060	*		CF42.Mg	CRL-6233	*
Carcinoma					CF45B.Mg	CRL-6237	*
rabbit, cottontail	Oc4T/cc	CRL-6501	*		CF51.Mg/L1	CRL-6242	*
Connective tissue					CF51.Mg/L3	CRL-6243	*
arm/shoulder				monkey, rhesus	CMMT	CRL-6299	*
cat	FC94.T	CRL-6113	*		CMMT	CRL-6300	*
dog	CF21.T	CRL-6220	*		110/C1		
mouse	MM36T(A)	CRL-6410	*		Mel III	CRL-6308	*
parakeet	MU27	CRL-6487	*	mouse	B-29	CRL-6325	*
					B-63	CRL-6326	*
					CCL-51	CRL-6337	*
					L-8A	CRL-6363	*

* No additional details; for an explanation see NBL Introduction, p. 344.

TUMOR INDEX

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NBL Animal Cancer Cell Lines				Sarcoma			
Mammary gland (continued)				rat	XC	CRL-6603	*
mouse (continued)	MM2MT	CRL-6373	*	Spleen			
				bovine	LB9.Sp	CRL-6058	*
	MM2MTC	CRL-6374	*		LB10.Sp	CRL-6063	*
	MM2SCT	CRL-6375	*		LB11.Sp	CRL-6067	*
	MM5MT	CRL-6590	*	cat	FC81.Sp	CRL-6107	*
	MM5MTC	CRL-6378	*	mouse	MM45T.Sp	CRL-6422	*
	MM5MTM	CRL-6379	*	Spleen/thymus/bone marrow pool			
	MM5/C1	CRL-6444	*	bovine	LB9.Sp/	CRL-6052	*
	MM5.1	CRL-6380	*		Thy/Bm		
	RIIIMT	CRL-6449	*	cat	FC83.Res	CRL-6567	*
	+/- MGT	CRL-6468	*	Thymus			
rat	Rn1T	CRL-6598	*	bovine	LB9.Thy	CRL-6059	*
	Rn2Nod	CRL-6600	*		LB10.Thy	CRL-6064	*
	Rn2T	CRL-6599	*		LB11.Thy	CRL-6068	*
	SMT/2A	CRL-6602	*	cat	FC81.Thy	CRL-6109	*
	LNM				FC95.Thy	CRL-6114	*
Mastocytoma				Thymus, erythroleukemia			
mouse	P815 MB	CRL-6448	*	cat	F25	CRL-6566	*
Melanoma				Unknown			
mouse	B16-F0	CRL-6322	*	mouse	MM14.OT	CRL-6384	*
	B16-F1	CRL-6323	*		MM15.OT	CRL-6438	*
Papilloma					MM52.T	CRL-6429	*
rabbit, domestic	CTPS	CRL-6496	*		MM53.T	CRL-6431	*
Pleural fluid				parakeet	MU10	CRL-6481	*
seal, harbor	PV1.P1	CRL-6526	*	rabbit, domestic	VX7	CRL-6504	*
Retroperitoneum				rat	Rn6T	CRL-6601	*
parakeet	MU13.T	CRL-6484	*				

* No additional details; for an explanation see NBL Introduction, p. 344.